2008 Massachusetts Safety Belt Usage Observation Study

Prepared for

Highway Safety Division
Office of Grants & Research
Executive Office of Public Safety & Security
10 Park Plaza, Suite 3720
Boston, MA 02116
Phone: (617) 725-3301

Prepared by

University of Massachusetts Traffic Safety Research Program

University of Massachusetts Amherst
139 Marston Hall
Amherst, MA 01003
Tel 413.577.1035 / Fax 413.577.1036
UMassSAFE@ecs.umass.edu

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Introduction

This report presents the results of the 2008 safety belt observation study conducted in the Commonwealth of Massachusetts. The observations and report were completed by the University of Massachusetts Traffic Safety Research Program (UMassSafe) located at the University of Massachusetts in Amherst. This observational study was conducted as a component of an effort to evaluate safety belt usage in the Commonwealth as directed by the Highway Safety Division.

The reported safety belt usage in Massachusetts, a secondary safety belt law state, has consistently had an observed usage rate lower than the national average. Nevertheless, the belt usage in Massachusetts has increased since 1998 as presented in Table 1.

Table 1 Massachusetts Safety Belt Usage Rates, 1998-2007

Observation Year	Observed Safety Belt Usage Rate (Weighted and Rounded)
1998	51%
1999	52%
2000	50%
2001	56%
2002	51%
2003	62%
2004	63%
2005	65%
2006	67%
2007	69%

Source: Highway Safety Division, 2007 Massachusetts Safety Belt Usage Observation Survey

In 2008 the safety belt study was completed in two stages: 1) a full blown statewide survey to assess safety belt usage in the Commonwealth of Massachusetts in compliance with *SAFETEA-LU* requirements and 2) a sub-sample consisting of approximately 20 percent of the data collection points of the full-survey completed in advance of the HSD-sponsored Spring *Click It or Ticket* (CIOT) Mobilization. This report represents the direct observation results from both of these observation efforts.

The sampling model was developed and approved by the National Highway Traffic Safety Administration (NHTSA) and builds upon a similar methodology employed in 2007. The sampling plan utilized the Massachusetts Statewide Travel Demand Model to stratify roadways in Massachusetts with the probability of a segment being selected being dependent on the proportion of road segment traffic volumes to the total volumes of all segments in the corresponding stratum. Roadways were stratified by direction on the basis of: functional classification, geography, and time period and day of the week.

Observation Approach

As a component of the observation study, teams of observers made 160 site visits for the full-blown statewide observation study and 30 site visits for the subsample observations. The teams observed and recorded the following attributes for occupants of passing vehicles:

- Vehicle information:
  - Vehicle type (passenger car, pickup truck, SUV, van, small commercial passenger vehicles)
  - State of vehicle license plate (MA, NH, Other)
- Shoulder belt usage:
  - Driver seat belt usage
  - Front seat outboard passenger seat belt usage
- Vehicle occupant information
  - Driver gender
  - Driver age category (teenager, adult, elderly adult)
  - Driver apparent race (white, black, Hispanic, other)
  - Passenger gender
  - Passenger age category (child*, teenager, adult, elderly adult)
  - Passenger apparent race (white, black, Hispanic, other)

Observations were completed across the commonwealth with the regions as pictured in Figure 1. Within each region equal visits were made based upon time of day/day of week and roadway functional classification. The specific time periods included the following:

- Weekday A.M. Peak Period (6 a.m. to 10 a.m.)
- Weekday Midday Peak Period (10 a.m. to 3 p.m.)
- Weekday P.M. Peak Period (3 p.m. to 7 p.m.)
- Weekend Period (6 a.m. to 7 p.m.)

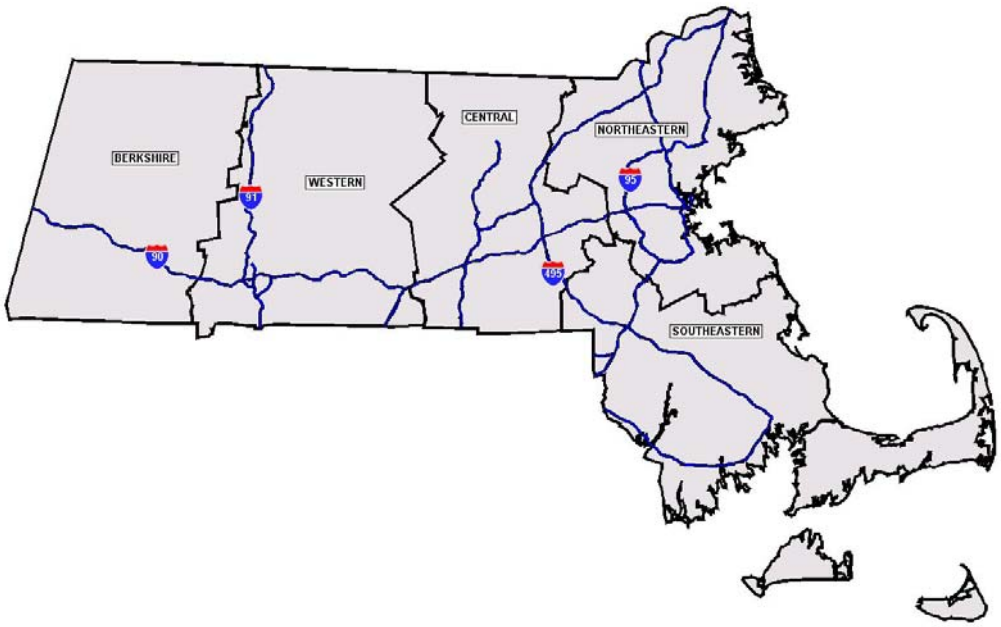

Figure 1: Observation Regions

Roadways were classified as local, collector, arterial, or freeway locations. Please note that the observation locations visited during this subsample were visited again during the full-blown observational study.

The combination of Region, Time/Day, and Roadway Classification result in the creation of 80 unique strata from which two observation locations were randomly sampled for each strata. Please note that the approved sampling plan called for the addition of sites as needed if the calculated variance did not achieve plus/minus 5 percent as required with NHTSA protocol.

Results

Between June 5 and June 30, 2008 a total of 40,719 drivers and front outboard passengers in a total of 33,555 vehicles were observed at the 160 observation locations. The statistically weighted percentage of front seat occupants properly using seat belts during the observation study was **66.84 percent.** Based upon the variation in the sampling plan the 95% confidence interval ranges between 66.16 and 67.52 percent with a relative error well below the required 5 percent threshold. This number represents the first downward trend in seat belt usage rates reported since 2002; the usage rate has returned to rates similar to those reported in 2005 and 2006. In an unweighted format the percentage of belt usage was 68.01 percent. Table 2 presents a breakdown of observed variables, in a weighted format and as compared to 2007 values.

Table 2 Summary of Study Data by Observation Variable - Weighted

Observation Variable	2008 Data		2007 Data
	Total Observed Occupants	Weighted Percent Belted	Weighted Percent Belted
All Vehicle Occupants	40,719	66.84	68.72
Gender			
Male	22,097	61	62
Female	18,553	74	76
Status Unknown	69	83	68
Apparent Age			
Child (passenger <12)	467	83	83
Teen	1,710	59	69
Adult	34,136	66	68
Elder Adult (>65)	4,394	76	78
Status Unknown	12	90	78
Apparent Race			
Black	1,984	63	68
Hispanic	1,792	48	61
White	35,597	68	69
Other	1,171	70	75
Status Unknown	175	62	51
State of Vehicle Registration			
Massachusetts	37,928	66	64
New Hampshire	274	69	75
Out of State (Other)	2,474	78	82
Unknown	43	80	NR
Vehicle Type			
Passenger Car	22,789	69	71
Pick-up Truck	4,437	49	56
SUV	8,855	72	71
Van	3,310	70	74
Commercial Vehicle	1,328	43	45
Time of Day/Day of Week			
A.M. Peak – Weekday	9,649	67	65
Midday Peak – Weekday	9,727	66	69
P.M. Peak – Weekday	11,297	67	71
Weekend	10,046	66	70
Observation Region			
Berkshire	7,585	71	72
Western	8,054	69	71
Central	7,819	65	68
Northeast	8,812	68	67
Southeast	8,449	61	65
Occupant Role			
Driver Alone	26,137	66	67
Driver with Passenger	7,418	68	72
Passenger	7,164	70	73
Functional Classification			
Collector	11,363	60	64
Arterial	15,646	66	66
Freeway	11,281	74	77
Local	2,429	72	65

As part of the subsample observations 30 site visits were made and reported on prior to the CIOT Mobilization. Between April 8 and May 9, the observed belt usage at these subsample locations was 62.43 percent. As part of the full-blown statewide observation these 30 observation locations resulted in an observed belt usage of 66.58 percent representing an increase of 4.15 percentage points. Table 3 summarizes the before and after numbers at each of the subsample locations. Please note that one location was observed twice in each of the observation periods. As shown in Table 3 the belt usage after the CIOT Mobilization increased, decreased, and remained unchanged (<1%) at 14, 12, and 3 observation locations, respectively.

Table 3 Summary of Subsample Data by Observation Location (Unweighted)

Observation Location		Pre CIOT Mobilization % Belted	Post CIOT Mobilization % Belted	Difference Pre vs. Post CIOT Mobilization
City/Town[a]	Observation Location	(known status)	(known status)	
Attleboro	Pleasant St.	60.61%	65.97%	5.36%
Berlin	Ramp from 495 SB to Rt 62	63.38%	65.96%	2.58%
Boston	Berkeley St	57.23%	62.97%	5.74%
Brockton	Main St	51.35%	35.15%	-16.20%
Chicopee	Center St.	53.42%	65.26%	11.84%
Clinton	Chestnut St	73.79%	51.38%	-22.41%
Holyoke	Beech St.	49.68%	69.06%	19.38%
Lanesborough	Bull Hill Rd.	47.66%	58.82%	11.16%
Lee	Lee exit off turnpike	83.03%	83.65%	0.62%
Ludlow	Center St.	57.05%	57.88%	0.83%
Lynn	Lynn Shore Dr	64.95%	74.84%	9.89%
Mansfield	Ramp from 495 to Rt 140	74.89%	71.90%	-2.99%
Monson	Main St.	42.80%	76.64%	33.84%
New Bedford	Coggeshall Rd	44.08%	41.03%	-3.05%
Northborough	Main St.	76.76%	73.39%	-3.37%
Norton	Ramp from 495 NB to Rt 123	79.35%	73.13%	-6.22%
Norwood	Central St.	60.06%	54.14%	-5.92%
Palmer	Palmer ramp Rt 32 to Rt 90	64.73%	70.21%	5.48%
Pittsfield	First St.	54.57%	66.31%	11.74%
Pittsfield	West St.	35.31%	73.13%	37.82%
Pittsfield	Dalton	60.26%	73.82%	13.56%
Plymouth	Sandwich St	67.79%	50.86%	-16.93%
Southboro	Ramp from 495 NB to Rt 9	79.31%	69.12%	-10.19%
Springfield	West Columbus Exit 91	63.40%	72.80%	9.40%
Sterling	Ramp from I-90 to Rt 140	77.73%	80.26%	2.53%
Walpole	West St.	78.28%	71.52%	-6.76%
Waltham	Ramp from I95 NB to Rt 20	87.56%	86.90%	-0.66%
Worcester	Clark St	55.82%	52.15%	-3.67%
Worcester	Millbury St	65.71%	43.87%	-21.84%
TOTALS		**62.43%**	**66.58%**	**4.15%**

[a] *Please note that although the city/town is listed this data represents data observed at that location and is not reflective of the overall city/town belt usage rate.*

Discussion

The results presented herein are consistent with observations completed in previous years. Some of the interesting findings include, but are not necessarily limited to the following:

- Males again had a significantly lower belt usage than females and this differential was nearly identical to that observed in 2007.
- The belt usage for teens is lower than previous years (59% herein versus 69% in 2007). However, it should be noted that in 2006, teen belt use was 59%. Not considering children in the front seat, elder adults had the highest observed safety belt usage rate.
- The belt usage of occupants in out of state vehicles was again higher than that in those of Massachusetts vehicles. Vehicles registered in New Hampshire had a rate that was slightly higher than the rate for Massachusetts vehicles (69% and 66% respectively).
- Based upon the apparent race of occupants, belt usage decreased for all apparent races. The apparent race with the greatest decrease was Hispanic (61% to 48%).
- Observed belt usage for occupants in small commercial vehicles and pick-up trucks were significantly lower than occupants of all other vehicles.
- Regionally, the observed belt usage was highest in the Berkshire region followed by the and Western and Northeastern regions.
- Belt usage remained almost unchanged throughout the course of the day.
- The observed belt usage was highest for passengers. Drivers with passengers had a higher belt use rate than drivers traveling alone.
- Consistent with previous observation data the observed freeway usage rate was highest along freeways (74%). Collectors had the lowest usage rate at 70%.
- The percent belted at the subsample observation was higher by four percentage points in the after period as compared to the pre-Mobilization observations. Across the observation locations belt usage increased at 14 of 29 observation locations. This is based on unweighted usage rates.